

Testimony

**Government Administration and Elections Committee
February 18, 2009
For HB-6441**

**Luther Weeks
Luther@CTVotersCount.org
334 Hollister Way West, Glastonbury, CT 00633**

Chairs and members of the Committee, my name is Luther Weeks. I am the Executive Director of Connecticut Voters Count and the Connecticut Citizen Election Audit Coalition. Today I am representing Connecticut Voters Count. My testimony does not necessarily represent the views of the Coalition or its other members.

I am a Certified Moderator and have personally observed eighteen (18) post-election audits in municipalities across the state. I am also a retired computer scientist and software engineer involved in voting integrity since 2004.

I am here again to ask that you improve the election laws to provide real confidence to the voters of Connecticut. The primary issues needing your attention are the post-election audits, ballot chain-of-custody, and the reporting of election results.

Currently we have a weak chain-of-custody for ballots, dependent on unenforceable procedures that are often violated. We need stronger, enforceable protection for the ultimate record of our votes.

The election results posted on the Secretary of the State's web site are inaccurate, difficult to check, and provide no confidence that critical results are correctly certified. These results are accumulated by an error prone three step process of transcription and addition, from polling place, to town hall, to the Secretary of the State's Office. Advocates from across the state have found obvious errors almost everywhere they have looked.

Based on five public hearings last year and on the Coalition reports of four post-election audits, we continue to conclude that the audits as performed are inaccurate, unreliable, and ineffective. Fortunately, we can make the audits much more effective, without counting more ballots.

We remain committed to an Independent Audit Board, relieving the Secretary of the State, towns, and registrars of the audit work. However, in these fiscally challenging times we have also proposed text for HB-6441 which would make significant improvements without significant fiscal impact.

Even though most members of the GAE are lawyers, when the committee drafted campaign finance law, you sought the advice of The Brennan Center for Justice. As you consider the current audit laws and other bills before the committee effecting voting integrity and security, we encourage you to seek the best advice of legal experts, computer experts, security experts, and the experience of other states.

We don't claim that our proposed text is perfect. One contributor is a lawyer. I am a computer expert. Yet, we turn to the collective work and experience of many others. Attached to my testimony are references endorsed by nationally recognized groups and individuals, used for drafting HB-6441. The Principles and Best Practices for Post-Election Audits created by a variety of experts, endorsed by the Brennan Center for Justice, Common Cause, Verified Voting, the American Statistical Association, CTVotersCount, TrueVoteCT and others; and a similar document from the League of Women Voters, U.S.

We urge you to seek and follow the advice of recognized subject matter experts and the experience of other states as you consider improving our voting systems. What often is an attractive idea, also often has risky unintended consequences as well.

Summary

We want every citizen's vote to be counted! To be counted accurately! And to be counted only once!

Thank you.

Testimony Table of Contents

Summary	1
Bills Supported and Opposed	2
Inadequacies of HB-6440, (Section 31):	2
Voting Integrity Problems Requiring Immediate Attention	3
Petition signed by 994 Connecticut voters:	4
References: Supporting Immediate Voting Integrity Concerns	5
Various Additional Bills and Concepts With Voting Integrity Implications	6
Extracts Of Reference Materials:	7
Ballot Security Recommendations: Brennan Center For Justice	7
Ballot Security: CT Coalition Audit Observation Report (Extract)	8
Audit Discrepancies: CT Coalition Audit Observation Report (Extract)	8
Inaccurate Reporting of Election Results	11
Summary: Principles And Best Practices For Post Election Audits	13
Summary: League Of Women Voters: Election Audit Report	14
Recommendations: CT Coalition Audit Observation Report	15
Computer Technologists' Statement On Internet Voting (RE: HR-5903)	17

Bills Supported and Opposed

Bills Supported:

HB-6441, SB-917, SB-909, HB-6435, HB-5083

Bills Opposed:

HB-6440 (Section 31), SJ-42, SJ-43, HB-5012, HB-5903, HB-6437

Inadequacies of HB-6440, (Section 31):

One step forward:

- HB-6440 starts and completes the audit selection and counting earlier.

Several steps backward:

- Leaves in place the inadequacies and inefficiencies of the current law
- Reduces the burden on large towns at the expense of medium and small towns
- Reduces the efficiency and effectiveness of the audit
- In Elections, like 2010 only one state office out of about nine is selected for audit.
- Random selection can be held in private and is selected by an official, the Secretary of the State, who will normally be on the ballot in years like 2010. This reduces the value of and negates the credibility of the audit.

I assume the last inadequacy is unintended. It could put a Secretary of the State in the embarrassing position of choosing a race for audit in secret, which could easily be interpreted as benefiting the Secretary's party or possible their own candidacy for office. A race with a large margin or little competition, such as Registrar of Voters, could be selected, while a close race for Governor or other constitutional office might not be selected, and thus not audited.

Voting Integrity Problems Requiring Immediate Attention

Ballot Chain-Of-Custody

- Ballot chain-of-custody laws and procedures are frequently violated
- Ballots should be protected until the end of audits, audit expansions, and potential audit investigations. They are currently only protected until day 14 after an election.
- Current laws and procedures are inadequate in that they allow unmonitored access by multiple lone individuals at any time. Access must require at least two individuals and stronger storage security requirements must be specified.

Official Vote Tallying/Reporting

- When official results do not match the intentions of the voters, this could result in incorrect winners being declared and/or parties not receiving full credit for qualification purposes.
- Official vote tallying requires several steps of manual transcription and addition. It is error prone. They represent only the totals of the transcriptions and additions through three levels: from the district Moderator's Return, to the Head Moderator's Return, to data entry and accumulation by the Secretary of the State's Office.
- Official results posted on the Secretary of the State's web site are difficult to check. The only way is to get the district data from individual town halls and completely duplicate the transcription and addition process.
- Noting large anomalies, advocates have found several errors in the November 2008 results posted on the Secretary of the State's web site.
- Official results posted on the Secretary of the State's web site are inadequate and do not have sufficient detail to meet recognized audit requirements to check against post-election audit report machine totals. They are insufficient to provide data to check for anomalies or to check if reported audit discrepancies could change the results of an election.

Post-Election Audit Counting

- Election officials lack the training to count votes with accuracy, transparency, and confidence. Many believe that counting votes accurately is not possible in Connecticut, while other states can and have routinely counted votes accurately by hand.
- Huge discrepancies are reported in the results, yet are dismissed as human error without adequate, transparent, secure investigation.
- Published post-election audit procedures are routinely not followed and not obeyed.
- Post-election audit forms are filled out sloppily and frequently omit critical data.
- Post-election audit counting is required to be public, but there are no requirements for advanced notification. Current procedures have proven inadequate for the public to find the dates, times, and locations in advance.
- Audit procedures are not enforceable.

Post-Election Audit Design

- 10% random audit of three races is inefficient. Audits based on statistical principles could provide much more integrity counting on average approximately the same number of ballots.
- There are many exceptions that allow openings for error and opportunities for fraud: Ballot questions, referendums and special elections are exempt. Districts with recounts or contests are exempt. Central count absentee ballots are exempt.
- There is no requirement that the random selection of races to audit be noticed and open to the public.
- There are no advanced notice requirements for public events such as random drawings and local audit counting. It is difficult for the public to observe without sufficient time and means of notice.
- The entire audit should be started and completed much sooner
- For additional details, see the CTVotersCount Petition (2009)

Recanvass and Recount

- Recounting and recanvassing on close vote or contest should be manual hand to eye counting. Computer science and experience in other states tell us that recounting by machine is inadequate
- The MN recount took 45 elapsed days, approximately one day might have been saved by machine counting.
- Connecticut should move toward adopting recount standards equivalent to those in Minnesota to assure the voters' intent is realized in close elections.

Petition signed by 994 Connecticut voters:

Petition To Enhance Confidence In Connecticut Elections (2009)

To: The Honorable M. Jodi Rell, Governor
The Honorable Susan M. Bysiewicz, Secretary of the State
Government Administration and Elections Committee
Connecticut General Assembly

Whereas, election integrity is a basic requirement of democracy; it is impossible to evaluate or test electronic voting sufficiently to guarantee accurate election results; recent scientific studies, including those from the University of Connecticut commissioned by the State of Connecticut, show that the AccuVote-OS is highly subject to errors and fraud by insiders, neglected procedures, or compromised procedures; history has shown that election procedures are unenforceable and frequently violated or ignored, including in Connecticut (as demonstrated in public hearings across the state, post-election audit observations, and memory card audits); history has shown that paper balloting alone is also subject to error and fraud; we cannot continue risking democracy with inadequate laws insufficient to provide voting integrity and confidence.

We the undersigned request that appropriate and sufficient post-election audit legislation be enacted during the 2009 legislative session that meets high levels of security, transparency, and post-election audit standards:

- Providing expeditious, transparent, public, hand-counted, random audits after every type of election, primary, and referendum, Federal, State and local.
- Affirming the purposes of the audits are: to assure integrity of the final election result; to prevent, to uncover, to report discrepancies due to error, malfunction, and fraud; and to evaluate the integrity of the voting process.
- Requiring procedures specified in advance, overseen, expanded where appropriate, and certified by an Independent Audit Board, based on the current level of science in election auditing.
- Requiring a high confidence that any election outcome that is confirmed by the audit is in fact correct.
- Requiring all audit tallying sessions, random drawings and pre-election testing sessions be open to the public and announced publicly at least five days in advance at a single statewide publicly available web site;
- Requiring the entire audit process be transparent and observable with clear written procedures for random selection, audit tallying, audit reporting, and audit escalation in the case of discrepancies.
- Requiring the Independent Audit Review Board to review audit results and posted election statistics with the power to order full or partial hand-count recounts whenever they determine that the results may not reflect the intention of the voters or would be in the interest of enhancing public confidence.
- Requiring that all types of ballots must be audited by manual hand-counting including district counted, centrally counted, manually counted, provisional, and absentee ballots.
- Requiring that the audit must be completed before and results incorporated into the final official results;
- Providing that preliminary election results, audit results, and audit reports must be made available publicly, indefinitely, in a downloadable format in a public web archive.
- Codifying in law a strict, enforceable chain of custody for ballots, election day reports, memory cards, and tabulators to prevent the addition, subtraction, substitution, or alteration of such records until released by the Independent Audit Board.
- Requiring such chain of custody to mandate permanent, publicly available records of each access, transportation, sealing and unsealing, while precluding access by single individuals, members of a single political party, or persons representing a single candidate in a primary.
- Providing for mandatory one-hundred percent independent testing of all memory cards or similar election specific programming prior to shipment to local election officials, conducted within Connecticut by an entity independent of the entity(s) responsible for programming such equipment.

Whereas, the added costs of manual audits represent an unfunded mandate by the State, necessitated in part by Federal laws, the responsibility for which falls disproportionately on smaller municipalities; these costs represent a small fraction of the cost of optical scan voting, a small fraction of the costs of an election, less than the cost per voter a candidate or legislator spends on a single mailing; a small fraction of the costs of many recent instances of lax oversight and corruption; these costs represent a small price to insure a government of and by the people.

We the undersigned also:

- Are willing to pay our fair share in state taxes to reimburse towns for reasonable best practice costs of such manual audits, which are estimated to be in the range of \$0.20 to \$0.50 per ballot cast in Federal, State, and Municipal elections.
- Request that you seek ways to use Federal funds to offset the maximum proportion of these costs.

References: Supporting Immediate Voting Integrity Concerns

Connecticut Citizen Election Audit Coalition

Reports on four post-election audits in Connecticut and recommendations

<http://www.CTElectionAudit.org>

Connecticut incident reports on inaccurate reported election results

Shelton and Stamford: <http://www.ctvoterscount.org/?p=1089>

Avon: <http://www.ctvoterscount.org/?p=1242>

Sherman and Plainfield: <http://www.ctvoterscount.org/?p=1476>

Glastonbury: <http://www.ctvoterscount.org/?p=1427>

Portland and Old Lyme: <http://www.ctvoterscount.org/?p=1561>

Documented Problems In Election Integrity, Nationwide:

Alabama votes manipulated: <http://www.ctvoterscount.org/?p=186>

Florida, scanner results vary: <http://www.ctvoterscount.org/?p=784>

<http://www.bradblog.com/?p=6461>

RI, fraud uncovered: <http://www.ctvoterscount.org/?p=766>

Ohio, many schemes documented in 2004: <http://www.ctvoterscount.org/?p=336>

Principles And Best Practices For Post-Election Auditing

Endorsed by the Brennan Center for Justice, Common Cause, Verified Voting, American Statistical Association and others: <http://www.electionaudits.org/principles>

League of Women Voters, Audit Report

http://www.lwv.org/Content/ContentGroups/Membership/ProjectsTaskforces/Report_ElectionAudits.pdf

Brennan Center For Justice: Concerns, Security, and Audit Recommendations

The Machinery Of Democracy., http://brennan.3cdn.net/a56eba8edf74e9e12e_r2m6b86s2.pdf

Election Audits: Restoring Trust In Elections

http://brennan.3cdn.net/f1867ccc368442335b_8em6bso3r.pdf

Software Vulnerabilities

Brennan Center For Justice, *The Machinery Of Democracy*:

http://brennan.3cdn.net/a56eba8edf74e9e12e_r2m6b86s2.pdf

UConn: *Tampering with Special Purpose Trusted Computing Devices: A Case Study in Optical Scan E-Voting*, <http://voter.engr.uconn.edu/voter/wp-content/uploads/seea-tamperevoting.pdf>

UConn: *An Authentication and Ballot Layout Attack against an Optical Scan Voting Terminal*, <http://voter.engr.uconn.edu/voter/wp-content/uploads/evt07.pdf>

Problems with Connecticut Memory Cards

UConn Reports: <http://voter.engr.uconn.edu/voter/reports/>

The Risks Of Outsourcing (e.g. CT Memory Card Programming and Scanner Maintenance):

Voters Unite Report., Vendors are Undermining the Structure of U.S. Elections,

<http://www.votersunite.org/info/ReclaimElectionsSumm.asp>

Various Additional Bills and Concepts With Voting Integrity Implications

Often a seemingly attractive proposal has well intentioned support, provides obvious benefits, but also has serious unintended consequences for voting integrity. We do not question anyone's integrity. All such ideas should be subject to the collective evaluation and advice of experts: computer scientists, security experts, experts on voting law, and voting integrity advocates from across the country.

Election Day Registration in Connecticut

- **Conditionally For***: Voter Registration today in Connecticut involves reasonable checking of eligibility – equally reliable checks can be performed quickly and equally reliably on election day. Extra It would encourage more legitimate voters and avoid all the potential for erroneous disenfranchisement. Our support is conditional upon effective law and implementation. Added expense and effort by election officials would be offset by the savings of avoiding presidential ballots and many provisional ballots.

The National Popular Vote and National Popular Vote Agreement/Compact

- **Conditionally Against***: We understand the appeal of the popular election of the President. It sounds truly democratic and fair. However, we are opposed to the popular election of the President, in any form, unless and until there are uniform election laws, enforceable, and enforced nationwide. It will cause inequality, promote fraud, and likely end with the courts deciding every close election.
<http://www.ctvoterscount.org/?p=1580>
<http://www.ctvoterscount.org/?p=1498>
<http://www.ctvoterscount.org/?p=1045>

Early Voting, Mail-In Voting, and Unlimited/No Excuse Absentee Voting

- **Conditionally Against***: Significant numbers of absentee voters are disenfranchised in every election by rejection of their ballots – usually for good reason, but they are disenfranchised and their intentions are not realized. These methods in general have security and secrecy challenges, invite fraud, error, and disenfranchisement. We also note in these tough economic times that early voting can be a significant expense, especially in New England with town administered voting.
<http://www.ctvoterscount.org/CTVCdata/09/01/ECM20090128.mht>
<http://www.ctvoterscount.org/?p=1141> <http://www.ctvoterscount.org/?p=194>

Internet Voting, Fax-In Voting, and Email-In Voting, including for the Military

- **Conditionally Against***: There are many security and fraud concerns with internet voting. It is possible that reliable methods can be developed. Until such methods are articulated and evaluated by computer and security experts, we will remain opposed. Even the Department of Defense is on record against internet voting, and email voting, they also point out that fax voting would preclude the secret ballot. (There are other safer ways to help our soldiers vote) Computer Technologists' Statement on Internet Voting: <http://www.ctvoterscount.org/?p=662>

(*) When we say we are "Conditionally Against" a proposition, we mean that nobody has proposed a realistic safe way to accomplish the proposition. We remain open to the possibility that a means may be found that would pass the scrutiny of the majority of computer scientists, security experts, election officials, and voting integrity advocates.

(*) When we say we are "Conditionally For" a proposition, we mean that other states have safe implementations of the proposition or computer scientists, security experts, election officials, and voting integrity advocates have recommended a safe solution. We caution that a particular implementation or law may not meet a reasonable standard of safety.

Extracts Of Reference Materials:

Ballot Security Recommendations: Brennan Center For Justice

Post-Election Audits: Restoring Trust In Elections, page 43-44:

ENSURE THE PHYSICAL SECURITY OF AUDIT MATERIALS.

Effective auditing of voter-verifiable paper records will serve to deter attacks on voting systems and identify problems only if states have implemented solid procedures to ensure the physical security of election materials used in a post-election audit, such as records of the vote, voting machines, and tally servers. Sound security measures should include a clear chain-of-custody of these materials. Missing or damaged paper or electronic records will make the reconciliation of audits all but impossible.

In *The Machinery of Democracy*, the Brennan Center examined some of the best chain-of-custody practices in jurisdictions across the country. Among the practices cited approvingly in the report were:

- Between elections, voting systems for each county are locked in a single room, in a county warehouse.
- The warehouse has perimeter alarms, secure locks, video surveillance and regular visits by security guards.
- Access to the warehouse is controlled by sign-in procedures, possibly with card keys or similar automatic logging of entry and exit for regular staff.
- Some forms of tamper-evident seals are placed on machines before and after each election. Election officials should place seals over all sensitive areas including vote data media compartments, communication ports and the seams of the voting system case.
- At the close of polls on Election Day, all audit information (i.e., event logs, voter-verifiable paper records, paper ballots, machine printouts of vote totals) that is not electronically transmitted as part of the unofficial upload to the central election office is hand-delivered in official, sealed information packets or boxes. All seals are numbered and tamper-evident.
- The transportation of information packets is completed by two election officials representing opposing parties who have been instructed to remain in joint custody of the information packets or boxes from the moment it leaves the precinct to the moment it arrives at the county election center.
- Once the sealed information packets or boxes have reached the county election center, they are logged. Numbers on the seals are checked to ensure that they have not been replaced. Any broken or replaced seals are logged and the reason for broken or replaced seals is investigated, where necessary. Intact seals are left intact.
- After the packets or boxes have been logged, they are provided with physical security precautions at least as great as those listed for voting machines, above. They should be stored in a room with perimeter alarms, secure locks, video surveillance and regular visits by security guards and county police officers; and access to the room is controlled by sign-in, possibly with card keys or similar automatic logging of entry and exit for regular staff.

Full document available at:

http://brennan.3cdn.net/f1867ccc368442335b_8em6bso3r.pdf

Ballot Security: CT Coalition Audit Observation Report (Extract)

Chain of Custody

Several reports revealed multiple concerns with chain of custody. In twelve (12) observations, observers expressed concerns with the chain of custody in the following ways:

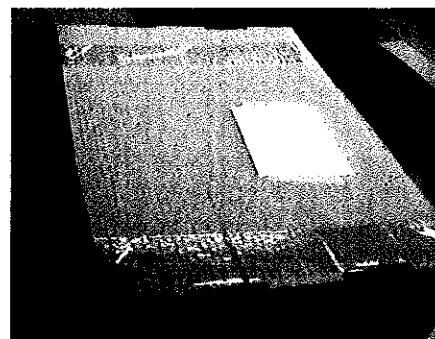
- Six (6) observations indicated that the ballots were not under the observation of two individuals at all times.
- Two (2) observations indicated that the ballot transfer cases were opened prior to the announced start time of the audit.
- Four (4) observations reported that ballot transfer case seals were not intact.
- Three (3) towns failed to reseal the ballots at the end of the audit. This is an improvement over the seven (7) cases observed in August.
- Three (3) observers reported that seals had been applied on election night and were still intact. However, these seals did not, in fact, seal the ballot transfer cases containing the ballots. According to these observers:

Ballots never sealed properly because seals were not through proper links so ballots could be accessed without disturbing seals.

While intact, one seal was threaded through a luggage tag tie attached to the zipper pull and not to the zipper pull itself. If the luggage tag was cut, the bag could have been opened and resealed with a new luggage tag.

When I arrived one registrar was alone in the room with an open box of ballots. The ballots were in four cardboard boxes. She said the registrars opened one box in the afternoon to start making piles of 50 for the teams to count. The seals were hand numbered pieces of paper taped to the top of each box. The seals were not disturbed by the opening of the boxes.

- One (1) observation reported that some ballots were not sealed at all:



Only one bag of ballots had a seal. Two large boxes of ballots were taped shut with clear postal tape but had no seals. All were stored in a vault (storage room) adjoining the audit room... The cardboard boxes used as containers were not tamper-proof. Although taped up thoroughly, they had been re-used and re-taped many times and it would be easy to do so again without creating a tip-off that they had been opened.

- One (1) observation report noted a so-called ballot "sleep-over". From our observer:

Registrar did not record forms at counting site. Took them and sealed ballots to office to record... There was a discrepancy between tape and manual votes and ballots. Instead of locking the ballot sack back up in the room

Audit Discrepancies: CT Coalition Audit Observation Report (Extract)

A. Ballot Count Discrepancies

As mentioned earlier in this report, several audit reports are incomplete. We have no way of analyzing the data that was not provided; therefore we have no basis to conclude that the machines counted ballots accurately, which is the basic purpose of the audit. For the purposes of this section we have disregarded incomplete reports.

Among our greatest concerns are the discrepancies in data where no thorough or reasonable explanation is provided by election officials. Some of the most outstanding examples are presented in Table 1 below. This table shows, in ten voting districts, the discrepancies between the numbers of ballots counted by hand and the numbers of ballots processed by the tabulators on Election Day, as recorded on optical scanners' tabulator tapes. In nine of these districts, the tabulator processed more ballots than were counted by hand, ranging from 9 to 24 ballots. In the tenth district, the hand-count included 7 more ballots than were processed by the tabulator.

Hand Counted Ballots	Tabulator Counted Ballots	Difference	%
2929	2953	24	0.8%
1140	1155	15	1.3%
2234	2248	14	0.6%
2228	2242	14	0.6%
4718	4731	13	0.3%
1216	1228	12	1.0%
1155	1167	12	1.0%
2435	2444	9	0.4%
1497	1506	9	0.6%
1080	1073	7	0.7%

Table 1: Discrepancies in Numbers of Ballots Counted by Hand vs. Counted by Tabulator in Ten Districts, November 2008 Audits

Statements on the official audit reports:

[Differences] can be attributed to disputed ballots not being processed by the optical scanner OR human error in the manual counting of the ballots.

We were off by a small marginal number, we recounted those offices twice.

For those races that are over with the hand count number, either human error is a factor or the tabulator did not count all the disputed ballots.

*"In my opinion the Accu-Vote machines are in-accurate"...Registrar
"I am in agreement with [The Registrar]" –Registrar Elect*

Possible machine error.

At the end of the audit we found discrepancies of up to 4 votes in 3 individual races. We are at a loss to explain this. We very carefully had 2 counters count 50 ballots and then 2 more counters count the same 50 ballots. When there was a discrepancy between the results of the two counts, the registrars counted the ballots a 3rd time to determine the result...We have all of the ballots in their original batches of 50 along with two sets of tally sheets and an accompanying audit sheet and they are available for examination at any time.

Based on observer reports, we do not believe that all of the hand counts are accurate because of the questionable counting methods observed. On the other hand, because of these discrepancies, we have no basis to conclude that the scanners all counted ballots accurately either.

B. "Questionable" Votes and "Undisputed" Ballots

Observations and comments from election officials indicate confusion about classifying "undisputed ballots" and about counting "questionable votes". An undisputed ballot is a ballot with no apparent problem or questionable votes on it. A questionable vote is a mark on a ballot that may not have been read properly by the optical scanner. Audits exhibited a variety of interpretations of what constitutes "undisputed" and "ballots with questionable votes". Audit statistics confirm these observations.

- Sixteen (16) districts were reported as having zero (o) ballots with questionable votes.
- On average, audits reported 1% questionable votes.

C. Vote Count Accuracy

Even considering confusion over ballots with questionable votes, an analysis of the district reports submitted to the Secretary of the State indicates that vote count discrepancies remain.

For example, Table 2 presents, by number and percentage, some of the larger vote differences between handcounted votes and machine counted votes in ten races, even when all ballots with questionable votes are included. The discrepancies listed range from 11 votes to 351 votes.

Col C Machine Totals (Tape)	Col F Hand Count Totals	Difference	%
222	118	104	46.8%
119	65	54	45.4%
813	462	351	43.2%
815	467	348	42.7%
217	162	55	25.3%
280	224	56	20.0%
278	226	52	18.7%
105	94	11	10.5%
1080	1001	79	7.3%
1558	1451	107	6.9%

Table 2: Selected races where hand-counted Votes (Including ballots with questionable votes) and Machine-Counted Votes Show Discrepancies.

Table 3 presents some of the larger differences, by count and percentage, where the machine counted votes did not equal the handcounted votes in ten non-cross-endorsed races. This table excludes all questionable votes. Discrepancies listed range from 29 votes to 366 votes.

Col C Machine Totals (Tape)	Col D (Undisputed Ballot Totals	Difference	%
1723	2089	366	17.52%
827	940	113	12.02%
1289	1457	168	11.53%
1239	1370	131	9.56%
1194	1316	122	9.27%
1368	1465	97	6.62%
759	809	50	6.18%
1168	1224	56	4.58%
758	787	29	3.68%
1376	1421	45	0.80%

Table 3: Selected Races Where Hand-Counted Votes (Undisputed Ballots) and Machine Counted Votes Show Discrepancies.

Full document and detailed base data can be found at: <http://www.CTElectionAudit.org/>

Inaccurate Reporting of Election Results

ConnPost: State: Shelton vote snafu 'human error'

<http://www.ctvoterscount.org/CTVCdata/08/12/ConnPost20081206.mht> (emphasis added)

"Shelton's arithmetically challenged voting officials snatched away a local victory from Democratic congressional challenger Jim Himes a week after initial results indicated that he won the city, state officials have determined..."

It didn't get straightened out until Nov. 13, nine days after veteran U.S. Rep. Christopher Shays conceded that Himes had won the Fourth Congressional District race representing 19 southwestern Connecticut communities.

Bysiewicz said there was no political malice involved, a fact that the feuding local voter registrars — Democrat John "Jack" Finn and Republican Peter R. Pavone — agree upon. With a lingering controversy over an incorrect result on a local ballot question sharply dividing the two registrars, both Finn and Pavone say it was strictly erroneous tabulation that initially had Himes winning in the part of the city that's in the Fourth District.

While the initial results had Shays with 7,114 votes and Himes with 7,632, after Pavone and Finn performed the recount, Shays had 7,668 and Himes had 6,744...

Finn said, "A mistake could have come from a person reading the number to the person on the computer. It had to be an error putting numbers into the computer." He noted that Shays' absentee ballots were also initially omitted...

"I definitely think it was human error, a transcription problem," recalled state Sen. Dan DeBicella, R-Shelton, who won re-election that night, but whose numbers also changed over the week and a half it took to agree on a final total...

There were also transcription errors when election officials dictated results that were typed incorrectly onto city spread sheets.

Bysiewicz believes that initial miscounts on absentee ballots was another problem...

"Arithmetic mistakes are not unusual," Bysiewicz said, noting that her staff even found a mistake in the turnout percentage of the finalists for her "Democracy Cup" award that goes to the towns and cities with the highest Election Day turnout.

"Avon said they had 96 percent, but when we when crunched the numbers ourselves they were wrong and New Hartford ended up being the winner," she said."

From a comment in a post at MyLeftNutmeg.com

<http://www.myleftnutmeg.com/showDiary.do?diaryId=10850> (emphasis added)

"Weird numbers in Stamford too... on the Constitutional Convention. The original number they sent to the SOTS office was 41,775 "no" votes. That was amended to something like 23,000 "no" votes due to an "Excel error," I'm told. That's a pretty big error. The original number is still posted on the SOTS web site."

Looking at the Stamford numbers at the Secretary of the State's web (12/7/2008):

- President Total Votes 49543 McCain 17510 Obama 31733 Nadar 289 Others 11
- Congress Total Votes 47327 Shays 19735 Himes-D 26039 Duffee 213 Himes-WF 1035 Carrano 305
- Question 1 Total Votes **58024** Yes 16249 No 41775
- Question 2 Total Votes 49087 Yes 25679 No 23408

At a minimum, an anomaly of about 9,000 votes

David Bidell's letter to the GAE, dated 2/13/2009:
(emphasis added)

"Dear GAE:

In examining the November 2008 general election, I have found many discrepancies between the vote counts published by the Secretary of the State in the official Statement of Vote, and the vote counts provided by individual town registrars and town clerks. Specifically, I have found that at least 1495 votes for the Working Families Party went unreported or misreported in at least eight towns.

Attached are the Congressional election results as published in the Statement of Vote. Notice that the SOTS reported zero votes on the Working Families Party line in eight towns. I have been in communication with the town registrars or town clerks of each of these towns and have obtained the Working Families Party results, as represented in the attached documentation. The figures according to these local town officials are listed in the second column below.

<i>Votes for Representative in Congress, Working Families Party</i>		
	<i>SOTS report</i>	<i>Local report</i>
<i>Avon</i>	0	269
<i>Colchester</i>	0	208
<i>Cromwell</i>	0	153
<i>Ledyard</i>	0	84
<i>Old Lyme</i>	0	350
<i>Plainfield</i>	0	280
<i>Portland</i>	0	103
<i>Sherman</i>	0	48
<i>Total</i>	0	1495

That makes 1495 votes that were not credited to the Congressional candidates on the Working Families Party line. These votes were either neglected, or they were misallocated to the Democratic Party count. In the case of Joe Courtney in District 2, four towns were miscounted (Colchester, Ledyard, Old Lyme, Plainfield) for a total of 922 votes. If Courtney's district-wide total was 14,086 votes on the WFP line, that is an error of 6.5%.

In addition, the Statement of Vote reports only 12 votes for Stephen Fournier in Cromwell, while the Cromwell registrar of voters reports 146:

<i>Votes for Stephen Fournier for Congress, Green Party</i>		
	<i>SOTS report</i>	<i>Local report</i>
<i>Cromwell</i>	12	146

In future elections, I hope that the SOTS will instruct all registrars and election moderators to count every vote. Additionally, if the voting machine tapes were scanned and published on the SOTS website, errors such as these could be quickly discovered and rectified before the official Statement of Vote is issued.

Sincerely,

David Bidell
2008 Green Party candidate for Stamford Registrar of Voters'

Summary: Principles And Best Practices For Post Election Audits

Principles:

1. **TRANSPARENCY:** Elections belong to the public. The public must be allowed to observe, verify, and point out procedural problems in all phases of the audit without interfering with the process.
2. **INDEPENDENCE:** The authority and regulation of post-election audits should be independent of officials who conduct the elections. The actual work of postelection audits may be best performed by the officials who conduct the elections.
3. **PAPER RECORDS:** Ideally, post-election audits use hand-to-eye counts of voter-marked, voter-verified paper ballots. Where such paper ballots are not available, other forms of voter-verifiable paper records should be used.
4. **CHAIN OF CUSTODY & BALLOT ACCOUNTING:** Robust ballot accounting and secure chain of custody of election materials and equipment are prerequisites for effective post-election audits.
5. **RISK-LIMITING AUDITS:** Post-election audits reduce the risk of confirming an incorrect outcome. Audits designed explicitly to limit such risk (risk limiting audits) have advantages over fixed-percentage or tiered audits, which often count fewer or more ballots than necessary to confirm the outcome.
6. **ADDRESSING DISCREPANCIES and CONTINUING THE AUDIT:** When discrepancies are found, additional counting and/or other investigation may be necessary to determine the election outcome or to find the cause of the discrepancies.
7. **COMPREHENSIVE:** All jurisdictions and all ballot types, including absentee, mail-in and accepted provisional ballots, should be subject to the selection process.
8. **ADDITIONAL TARGETED SAMPLES:** Including a limited number of additional targeted samples of ballots can increase audit effectiveness and public confidence. Such samples may be selected by candidates, issue committees, parties, election administrators, or others as provided by regulation.
9. **BINDING ON OFFICIAL RESULTS:** Post-election audits must be completed prior to finalizing official election results and must either verify the outcome or, through a 100% recount, correct the outcome.

Endorsed by The Brennan Center For Justice, Common Cause, Verified Voting, The American Statistical Association, CT VotersCount, TrueVoteCT, and others.

Full available at: document at: <http://www.electionaudits.org/principles>

Summary: League Of Women Voters: Election Audit Report

Table of Contents

Introduction.....	3
Recommended Guidelines for Election Audits.....	4
Guidelines for Auditing of Election Procedures and Processes.....	5
A. Transparency	5
B. Testing.....	6
C. Physical Protection of Voting Systems.....	7
D. Education and Training.....	8
E. Polling Place Procedures Prior to Voting.....	9
F. Polling Place Procedures During Voting.....	9
Guidelines for Conducting an Audit of Election Results.....	10
A. In Advance of the Election.....	10
1. Selecting Audit Units.....	10
2. "Risk Limiting" Audits and Statistical Considerations	11
3. Escalation Protocols.....	12
B. After the Election	13
1. Basic Checks at All Polling Places	13
2. Accounting for Provisional Ballots.....	13
3. Approval or Disapproval of Provisional Ballots.....	13
4. Accounting for Absentee Ballots.....	13
5. Starting and Completing Audits.....	14
6. Using Paper Records.....	14
7. Including All Ballots.....	15
8. Random Selection of Audit Units.....	16
9. Transparency.....	16
10. Selective Audits	17
11. Regulation of Audits.....	18
12. Ballot Secrecy	18
13. Maintenance of Records	18
C. How to Do the Audit Counting	18
D. Reporting Guidelines	20
1. Audit Report.....	20
2. Audit Results.....	20
Criteria for an Election Auditing Law	21
A. Process Audits.....	21
B. Post-Election Audits.....	21
Glossary of Election Audits Terminology	24
Election Audits Resources	28
A. Reports	28
B. Post-Election Audits.....	28
C. Government Service Efforts and Performance Reports	29
D. Sample Procedures for Hand Counting Ballots:	29
E. Web Sites.....	29
F. Other Resources.....	30

Full document available at:

http://www.lww.org/Content/ContentGroups/Membership/ProjectsTaskforces/Report_ElectionAudits.pdf

Recommendations: CT Coalition Audit Observation Report

I. Independent Audits

The current system of the conduct of audits by individual towns lacks consistency, accuracy, and professionalism. A nonpartisan, independent audit board or professional team of independent auditors should conduct the audits.

However, if audits continue to be conducted by local officials, we recommend the measures below to improve the security and integrity of Connecticut's election outcomes. Many of these same recommendations would apply if an independent audit board were established, with the board performing many of the audit functions now performed by or recommended to the Secretary of the State.

II. Audit Selection, Notification and Reporting*

*would also apply to independently-conducted audits

A. Amend PA 07-194 on selection and notification to:

1. require that the Secretary of the State randomly select the races to be audited during the same public event as the random selection of districts. In elections where federal and/or constitutional statewide offices appear on the ballot, at least one such race should be randomly selected from those federal races on the ballot and one race selected from statewide races on the ballot.
2. require that races randomly selected for audit be chosen by the Secretary of the State for all districts.
3. require that towns selected for audit be officially notified of their selection in a legally acceptable form, including an immediate posting of the list of audit sites on the Secretary of the State's Website.
4. require that towns provide ample notice of the scheduling and location of post-election audits to the Secretary of the State and on their municipal websites or local newspapers. We urge the Secretary of State's office to review how other states are establishing and publicizing the schedule of audits and race selection to ensure maximum public notice and transparency.

B. Amend PA 07-194 to mandate deadlines for:

1. random selection of audit locations
2. completion of audits
3. municipalities to report audit results to the Secretary of the State's office

C. Amend PA 07-194 on reporting to:

1. mandate a deadline for completion of required UConn reports and require that those reports include statistical data on deviations from the standards set in the audit law and reports on any incomplete or missing audit data
2. mandate timely publication of a final comprehensive report of each statewide audit and require that the report include local statistics and analysis from local audit report forms, elections officials' and observers' (if any) observations, and conclusions regarding the effectiveness of the audit. The report should be readily available to the public

D. Amend PA 07-194 on reporting to:

- require that audit reports be compared to the machine tapes and election night or final amended reports to assure that the correct machine tape counts are recorded. Audit reports should be amended to require that ballot transfer case seal numbers from election night, audit day (if different), and post-audit be submitted on the audit reports.

III. General Provisions

A. Procedures that will yield trusted audits must be specified in law or regulation and must be made enforceable by the State Elections Enforcement Commission. Procedures should also provide a mechanism for the Secretary of State's office to report irregularities to appropriate authorities such as the State Elections Enforcement Commission.

B. The Secretary of State's Office should:

1. establish mechanisms and controls to audit the audits (log, detect and take action on errors) to assure that prescribed methods are followed. Audit reports that are incomplete or contain obvious or unexplained discrepancies should be rejected by the Secretary of State's office and corrective action taken by election officials.
2. increase competency of registrars and election officials in election audits through mandatory educational programs that include security, audit organization, and conduct; the steps and details of the audit procedures; counting methods; and organizing and supervising the audit teams.

C. Amend PA 07-194 to:

1. mandate investigation and independent analysis of data discrepancies which are not thoroughly and reasonably explained .
2. require that copies of the Moderators' Returns, and machine tapes, be present at the audit for review
3. mandate that all ballots in all elections remain sealed until thirty days after all audits and audit investigations are complete. They should be released only after the Secretary of the State's notification in writing that the audit and investigations are complete. During that period ballots should only be unsealed temporarily for the purpose of recounts, audits, and state investigations – and resealed whenever audits, recounts, and investigations are complete or continued.
4. resolve the conflicting demands for any extended audit investigations with the need for re-programming of memory cards in preparation for new elections or referenda.
5. limit the role that candidates can perform in the post-election audit process. Opposed candidates, even if they are sitting registrars, should not supervise or have official roles in post-election audits. The Secretary of State's office should develop procedures to identify who will supervise and have an official role in audits in cases of this kind of conflict.
6. set forth specific and enforceable criteria for chain of custody, access logs, and secure storage facilities for ballots, memory cards, and machines. The Secretary of the State's office should establish a system of random unannounced inspections of storage facilities and access logs.

IV. Audit Procedures

A. The Secretary of the State should provide detailed guidance on methods of auditing that are efficient, transparent, specific, and accurate. National efforts should be reviewed, such as California's recently adopted audit procedures, the audit practices of Minnesota, recommendations of the Brennan Center, and the Principles and Best Practices for Post Election Audits¹.

B. The Secretary of State should amend procedures to:

1. remove the subjectivity associated with the identification of what constitutes an undisputed ballot and a ballot containing a questionable vote.
2. require all tallies be performed in public and audit reports be filled out as part of the actual public audit and displayed publicly at the end of the audit along with the tally sheets.
3. require that the results of all original manual counts and repeated counts, when necessary, be reported to the Secretary of the State's Office.
4. incorporate a requirement for "blind counting" into audit procedures.

V. Public Involvement

Observers rights should be established in law. As long as observers don't interfere with the hand counting process, the public should be allowed to observe and verify all phases of the election audit from district and race selection through any follow-up investigation.

¹ <http://www.electionaudits.org/principles>

Computer Technologists' Statement On Internet Voting (RE: HR-5903)

Election results must be *verifiably accurate* -- that is, auditable with a permanent, voter-verified record that is independent of hardware or software. Several serious, potentially insurmountable, technical challenges must be met if elections conducted by transmitting votes over the internet are to be verifiable. There are also many less technical questions about internet voting, including whether voters have equal access to internet technology and whether ballot secrecy can be adequately preserved.

Internet voting should only be adopted after these technical challenges have been overcome, and after extensive and fully informed public discussion of the technical and non-technical issues has established that the people of the U.S. are comfortable embracing this radically new form of voting.

A partial list of technical challenges includes:

- **The voting system as a whole must be verifiably accurate in spite of the fact that client systems can never be guaranteed** to be free of malicious logic. Malicious software, firmware, or hardware could change, fabricate, or delete votes, deceive the user in myriad ways including modifying the ballot presentation, leak information about votes to enable voter coercion, prevent or discourage voting, or perform online electioneering. Existing methods to "lock-down" systems have often been flawed; even if perfect, there is no guaranteed method for preventing or detecting attacks by insiders such as the designers of the system.
- **There must be a satisfactory way to prevent large-scale or selective disruption** of vote transmission over the internet. Threats include "denial of service" attacks from networks of compromised computers (called "botnets"), causing messages to be mis-routed, and many other kinds of attacks, some of which are still being discovered. Such attacks could disrupt an entire election or selectively disenfranchise a segment of the voting population.
- **There must be strong mechanisms to prevent undetected changes to votes**, not only by outsiders but also by insiders such as equipment manufacturers, technicians, system administrators, and election officials who have legitimate access to election software and/or data.
- **There must be reliable, unforgeable, unchangeable voter-verified records** of votes that are at least as effective for auditing as paper ballots, without compromising ballot secrecy. Achieving such audibility with a secret ballot transmitted over the internet but without paper is an unsolved problem.
- **The entire system must be reliable and verifiable** even though internet-based attacks can be mounted by anyone, anywhere in the world. Potential attackers could include individual hackers, political parties, international criminal organizations, hostile foreign governments, or even terrorists. The current internet architecture makes such attacks difficult or impossible to trace back to their sources.

Given this list of problems, there is ample reason to be skeptical of internet voting proposals. Therefore, the principles of operation of any internet voting scheme should be publicly disclosed in sufficient detail so that anyone with the necessary qualifications and skills can verify that election results from that system can reasonably be trusted. Before these conditions are met, "pilot studies" of internet voting in government elections should be avoided, because the apparent "success" of such a study absolutely cannot show the absence of problems that, by their nature, may go undetected. Furthermore, potential attackers may choose only to attack full-scale elections, not pilot projects.

The internet has the potential to transform democracy in many ways, but permitting it to be used for public elections without assurance that the results are verifiably accurate is an extraordinary and unnecessary risk to democracy.

List of endorsers and frequently asked questions available at:
<http://www.verifiedvotingfoundation.org/article.php?id=6611>